

**APM30H&TMC11H&IBBS200D&IBBS200T(Ver.B)  
V200R303**

## **User Guide**

**Issue     07**  
**Date      2010-08-30**

**HUAWEI TECHNOLOGIES CO., LTD.**





**Copyright © Huawei Technologies Co., Ltd. 2010. All rights reserved.**

No part of this document may be reproduced or transmitted in any form or by any means without prior written consent of Huawei Technologies Co., Ltd.

## **Trademarks and Permissions**



HUAWEI and other Huawei trademarks are trademarks of Huawei Technologies Co., Ltd.

All other trademarks and trade names mentioned in this document are the property of their respective holders.

## **Notice**

The purchased products, services and features are stipulated by the contract made between Huawei and the customer. All or part of the products, services and features described in this document may not be within the purchase scope or the usage scope. Unless otherwise specified in the contract, all statements, information, and recommendations in this document are provided "AS IS" without warranties, guarantees or representations of any kind, either express or implied.

The information in this document is subject to change without notice. Every effort has been made in the preparation of this document to ensure accuracy of the contents, but all statements, information, and recommendations in this document do not constitute the warranty of any kind, express or implied.

## **Huawei Technologies Co., Ltd.**

Address: Huawei Industrial Base  
Bantian, Longgang  
Shenzhen 518129  
People's Republic of China

Website: <http://www.huawei.com>

Email: [support@huawei.com](mailto:support@huawei.com)



# About This Document

## Purpose

This document describes the functions, specifications, hardware, and cables of the APM30H Ver.B, TMC11H Ver.B, IBBS200D Ver.B, and IBBS200T Ver.B. It also provides instructions for the hardware installation check and hardware maintenance.

- The APM30H is the Advance Power Module with heat-exchanger cooler.
- The TMC11H is the Transmission Cabinet of 11 U high with heat exchanger.
- The IBBS200T B is the Integrated Battery Backup System with TEC cooler.
- The IBBS200D is the Integrated Battery Backup System with direct ventilation.

## Product Version

The following table lists the product version related to this document.

Product Name	Product Version
APM30H Ver.B(hereinafter referred to as APM30H)	V200R303
TMC11H Ver.B(hereinafter referred to as TMC11H)	
IBBS200T Ver.B(hereinafter referred to as IBBS200T)	
IBBS200D Ver.B(hereinafter referred to as IBBS200D)	

## Intended Audience

This document is intended for:

- System Engineers
- Base station installation engineers

- Site maintenance engineers

## Organization

### 1 Changes in the APM30H&TMC11H&IBBS200D&IBBS200T(Ver.B) User Guide

This describes the changes in the *APM30H&TMC11H&IBBS200D&IBBS200T(Ver.B) User Guide*.

### 2 Overview of the APM30H Family

The APM30H family consists of the APM30H, TMC11H, IBBS200T, and IBBS200D.

### 3 Overview of the APM30H

This describes the exterior, structure, and components of the APM30H.

### 4 Overview of the IBBS200T

This describes the exterior, structure, components, and cables of the IBBS200T.

### 5 Overview of the IBBS200D

This describes the exterior, structure, components, and cables of the IBBS200D.

### 6 Overview of the TMC11H

This describes the exterior, structure, components, and cables of the TMC11H.

### 7 SLPU

The signal lightning protection unit (SLPU), which can be optionally configured with the UFLP, UELP, or USLP2, provides the signal surge protection.




### 8 Maintaining the Hardware for the APM30H&TMC11H&IBBS200D&IBBS200T



If the APM30H&TMC11H&IBBS200D&IBBS200T must be powered off for maintenance, the duration of the power-off state cannot exceed 48 hours.

## Conventions

### Symbol Conventions

The symbols that may be found in this document are defined as follows.

Symbol	Description
 <b>DANGER</b>	Indicates a hazard with a high level of risk, which if not avoided, will result in death or serious injury.
 <b>WARNING</b>	Indicates a hazard with a medium or low level of risk, which if not avoided, could result in minor or moderate injury.
 <b>CAUTION</b>	Indicates a potentially hazardous situation, which if not avoided, could result in equipment damage, data loss, performance degradation, or unexpected results.

Symbol	Description
 <b>TIP</b>	Indicates a tip that may help you solve a problem or save time.
 <b>NOTE</b>	Provides additional information to emphasize or supplement important points of the main text.

## General Conventions

The general conventions that may be found in this document are defined as follows.

Convention	Description
Times New Roman	Normal paragraphs are in Times New Roman.
<b>Boldface</b>	Names of files, directories, folders, and users are in <b>boldface</b> . For example, log in as user <b>root</b> .
<i>Italic</i>	Book titles are in <i>italics</i> .
Courier New	Examples of information displayed on the screen are in Courier New.

## Command Conventions

The command conventions that may be found in this document are defined as follows.

Convention	Description
<b>Boldface</b>	The keywords of a command line are in <b>boldface</b> .
<i>Italic</i>	Command arguments are in <i>italics</i> .
[ ]	Items (keywords or arguments) in brackets [ ] are optional.
{ x   y   ... }	Optional items are grouped in braces and separated by vertical bars. One item is selected.
[ x   y   ... ]	Optional items are grouped in brackets and separated by vertical bars. One item is selected or no item is selected.
{ x   y   ... }*	Optional items are grouped in braces and separated by vertical bars. A minimum of one item or a maximum of all items can be selected.
[ x   y   ... ]*	Optional items are grouped in brackets and separated by vertical bars. Several items or no item can be selected.

## GUI Conventions

The GUI conventions that may be found in this document are defined as follows.

Convention	Description
<b>Boldface</b>	Buttons, menus, parameters, tabs, window, and dialog titles are in <b>boldface</b> . For example, click <b>OK</b> .
>	Multi-level menus are in <b>boldface</b> and separated by the ">" signs. For example, choose <b>File &gt; Create &gt; Folder</b> .

### Keyboard Operations

The keyboard operations that may be found in this document are defined as follows.

Format	Description
<b>Key</b>	Press the key. For example, press <b>Enter</b> and press <b>Tab</b> .
<b>Key 1+Key 2</b>	Press the keys concurrently. For example, pressing <b>Ctrl+Alt+A</b> means the three keys should be pressed concurrently.
<b>Key 1, Key 2</b>	Press the keys in turn. For example, pressing <b>Alt, A</b> means the two keys should be pressed in turn.

### Mouse Operations

The mouse operations that may be found in this document are defined as follows.

Action	Description
Click	Select and release the primary mouse button without moving the pointer.
Double-click	Press the primary mouse button twice continuously and quickly without moving the pointer.
Drag	Press and hold the primary mouse button and move the pointer to a certain position.



# Contents

<b>About This Document.....</b>	<b>iii</b>
<b>1 Changes in the APM30H&amp;TMC11H&amp;IBBS200D&amp;IBBS200T(Ver.B) User Guide.....</b>	<b>1-1</b>
<b>2 Overview of the APM30H Family.....</b>	<b>2-1</b>
2.1 Functions of the APM30H, IBBS200T, IBBS200D, and TMC11H.....	2-2
2.2 Application Scenarios of the APM30H Family.....	2-6
2.3 Technical Specifications of the APM30H Family.....	2-8
2.3.1 Electrical Specifications of the APM30H and TMC11H.....	2-9
2.3.2 Engineering Specifications of the APM30H, IBBS200T, IBBS200D, and TMC11H.....	2-11
2.3.3 Surge Protection Specifications of the APM30H.....	2-15
2.3.4 Environmental Requirements of the APM30H, IBBS200T, IBBS200D, and TMC11H.....	2-16
<b>3 Overview of the APM30H.....</b>	<b>3-1</b>
3.1 Exterior of the APM30H.....	3-2
3.2 Structure of the APM30H.....	3-2
3.3 Cable Connections of the APM30H.....	3-3
3.4 APM30H Components.....	3-5
3.4.1 Fan Box.....	3-6
3.4.2 AC/DC Power System.....	3-14
3.4.3 Power Equipment (DC/DC).....	3-23
3.4.4 Core of the Heat Exchanger.....	3-26
3.4.5 Junction Box.....	3-27
3.4.6 ELU.....	3-28
3.4.7 Heater (Optional).....	3-29
3.4.8 SOU (Optional).....	3-30
3.4.9 Door Status Sensor.....	3-31
3.4.10 Smoke Sensor (Optional).....	3-32
3.5 APM30H Cables.....	3-34
3.5.1 PGND Cable.....	3-35
3.5.2 Input Power Cables for the APM30H.....	3-36
3.5.3 Power Cable for the SOU.....	3-37
3.5.4 Power Cable for the Heater.....	3-38
3.5.5 Power Cable for the Fan Box in the APM30H.....	3-39
3.5.6 ELU Signal Cable.....	3-40

3.5.7 APM30H Door Status Monitoring Cable.....	3-40
3.5.8 Monitoring Signal Cable for the Fan on the Front Door.....	3-41
3.5.9 Environment Monitoring Signal Cable.....	3-42
3.5.10 Monitoring Signal Transfer Cable.....	3-44
<b>4 Overview of the IBBS200T.....</b>	<b>4-1</b>
4.1 Exterior of the IBBS200T.....	4-2
4.2 Structure of the IBBS200T.....	4-2
4.3 Cable Connections of the IBBS200T.....	4-3
4.4 IBBS200T Components.....	4-4
4.4.1 TEC Cooler.....	4-5
4.4.2 Power Distribution Box.....	4-6
4.4.3 CMUA.....	4-7
4.4.4 Battery.....	4-12
4.4.5 ELU.....	4-13
4.4.6 Door Status Sensor.....	4-14
4.4.7 Temperature Sensor for the Batteries.....	4-15
4.4.8 Smoke Sensor (Optional).....	4-16
4.5 IBBS200T Cables.....	4-18
4.5.1 PGND Cable.....	4-19
4.5.2 Equipotential Cable.....	4-20
4.5.3 Power Cables for the Batteries.....	4-20
4.5.4 Power Cables for the TEC Cooler.....	4-21
4.5.5 ELU Signal Cable.....	4-22
4.5.6 Door Status Monitoring Cable.....	4-23
4.5.7 Monitoring Signal Cable for the Battery Cabinet.....	4-24
<b>5 Overview of the IBBS200D.....</b>	<b>5-1</b>
5.1 Exterior of the IBBS200D.....	5-2
5.2 Structure of the IBBS200D.....	5-2
5.3 Cable Connections of the IBBS200D.....	5-3
5.4 IBBS200D Components.....	5-4
5.4.1 Fan Box.....	5-5
5.4.2 Power Distribution Box.....	5-6
5.4.3 CMUA.....	5-7
5.4.4 Battery.....	5-12
5.4.5 ELU.....	5-13
5.4.6 Heating Film.....	5-14
5.4.7 Door Status Sensor.....	5-15
5.4.8 Temperature Sensor for the Batteries.....	5-16
5.4.9 Smoke Sensor (Optional).....	5-17
5.5 IBBS200D Cables.....	5-19
5.5.1 PGND Cable.....	5-20
5.5.2 Equipotential Cable.....	5-21

5.5.3 Power Cables for the Batteries.....	5-21
5.5.4 Power Cables for the Fans in the IBBS200D.....	5-22
5.5.5 Power Cable for the Heating Film.....	5-23
5.5.6 ELU Signal Cable.....	5-24
5.5.7 Door Status Monitoring Cable.....	5-25
5.5.8 Monitoring Signal Cable for the Battery Cabinet.....	5-25
<b>6 Overview of the TMC11H.....</b>	<b>6-1</b>
6.1 Exterior of the TMC11H.....	6-2
6.2 Structure of the TMC11H.....	6-2
6.3 Cable Connections of the TMC11H.....	6-3
6.4 TMC11H Components.....	6-4
6.4.1 Fan Box.....	6-5
6.4.2 DCDU-03.....	6-13
6.4.3 Core of the Heat Exchanger.....	6-16
6.4.4 Junction Box.....	6-16
6.4.5 ELU.....	6-18
6.4.6 Heater (Optional).....	6-18
6.4.7 Door Status Sensor.....	6-19
6.4.8 Smoke Sensor (Optional).....	6-20
6.5 TMC11H Cables.....	6-22
6.5.1 Equipotential Cable.....	6-23
6.5.2 Input Power Cable for the TMC11H.....	6-23
6.5.3 Power Cable for the Fan Box in the TMC11H.....	6-24
6.5.4 ELU Signal Cable.....	6-25
6.5.5 Door Status Monitoring Cable.....	6-26
6.5.6 Monitoring Signal Cable for the Fan on the Front Door.....	6-26
<b>7 SLPU.....</b>	<b>7-1</b>
7.1 Exterior of SLPU.....	7-2
7.2 Configuration of the SLPU.....	7-2
7.3 UELP.....	7-3
7.4 UFLP.....	7-5
7.5 USLP2.....	7-6
<b>8 Maintaining the Hardware for the APM30H&amp;TMC11H&amp;IBBS200D&amp;IBBS200T.....</b>	<b>8-1</b>
8.1 Routine Maintenance.....	8-3
8.2 Replacing the PMU.....	8-3
8.3 Replacing the PSU.....	8-7
8.4 Replacing the EPS Subrack.....	8-9
8.5 Replacing the AC Surge Protector.....	8-11
8.6 Replacing the Fuse.....	8-13
8.7 Replacing the Fan Box in the APM30H .....	8-16
8.8 Replacing the Core of the Heat Exchanger.....	8-18

8.9 Replacing the Fan on the Front Door of the APM30H.....	8-20
8.9.1 Querying the Type of Fan.....	8-20
8.9.2 Replacing the Fan for the Modularized Heat Exchanger Installed on the Front Door.....	8-20
8.9.3 Replacing the Fan for the Non-Modularized Heat Exchanger Installed on the Front Door.....	8-25
8.10 Replacing the Heater.....	8-27
8.11 Replacing the Fan Box in the TMC11H.....	8-29
8.12 Replacing the Batteries.....	8-31
8.13 Replacing the TEC Cooler of the IBBS200T.....	8-33
8.14 Replacing the Fan on the Front Door of the IBBS200D.....	8-36
8.15 Replacing the CMUA.....	8-39
8.16 Replacing the ELIA.....	8-43

## Figures

<b>Figure 2-1</b> APM30H (stacked on the battery cabinet) working with a distributed base station.....	2-7
<b>Figure 2-2</b> APM30H working with a separated macro base station.....	2-8
<b>Figure 3-1</b> Exterior of the APM30H.....	3-2
<b>Figure 3-2</b> Internal structure of the APM30H.....	3-3
<b>Figure 3-3</b> Cable connections of the APM30H working with a distributed base station.....	3-4
<b>Figure 3-4</b> Cable connections of the APM30H working with a separated macro base station.....	3-5
<b>Figure 3-5</b> Fan Box.....	3-6
<b>Figure 3-6</b> Fan.....	3-7
<b>Figure 3-7</b> HPML.....	3-8
<b>Figure 3-8</b> Ports on the panel of an HPML.....	3-8
<b>Figure 3-9</b> CMUA.....	3-10
<b>Figure 3-10</b> Ports on a CMUA (plan view).....	3-10
<b>Figure 3-11</b> Positions of the DIP switches on the CMUA (plan view).....	3-13
<b>Figure 3-12</b> DIP switch settings of the CMUA in different cabinets.....	3-14
<b>Figure 3-13</b> Structure of the EPS subrack in a distributed base station.....	3-14
<b>Figure 3-14</b> Structure of the EPS subrack in a separated macro base station.....	3-15
<b>Figure 3-15</b> PMU.....	3-17
<b>Figure 3-16</b> Ports, LEDs, and Switch on the front panel of a PMU.....	3-18
<b>Figure 3-17</b> Rear panel of a PMU.....	3-18
<b>Figure 3-18</b> DIP switch on the right of a PMU.....	3-21
<b>Figure 3-19</b> Panel of the PSU (AC/DC).....	3-22
<b>Figure 3-20</b> Power equipment (DC/DC).....	3-23
<b>Figure 3-21</b> Panel of the PSU (DC/DC).....	3-24
<b>Figure 3-22</b> Power Subrack (DC/DC).....	3-25
<b>Figure 3-23</b> Core of the heat exchanger.....	3-27
<b>Figure 3-24</b> Junction box.....	3-27
<b>Figure 3-25</b> Structure of the junction box.....	3-28
<b>Figure 3-26</b> ELU.....	3-29
<b>Figure 3-27</b> Heater.....	3-29
<b>Figure 3-28</b> SOU.....	3-30
<b>Figure 3-29</b> Different types of sockets.....	3-31
<b>Figure 3-30</b> Magnet part of the door status sensor.....	3-31
<b>Figure 3-31</b> Switch part of the door status sensor.....	3-32

<b>Figure 3-32</b> Smoke sensor.....	3-32
<b>Figure 3-33</b> Position for installing a smoke sensor in the TMC11H.....	3-33
<b>Figure 3-34</b> Position for installing a smoke sensor in the IBBS200D or IBBS200T.....	3-33
<b>Figure 3-35</b> PGND cable for the cabinet.....	3-35
<b>Figure 3-36</b> PGND cable for the modules.....	3-35
<b>Figure 3-37</b> 220 V AC single-phase input power cable.....	3-36
<b>Figure 3-38</b> Power cable for the SOU.....	3-38
<b>Figure 3-39</b> Power cable for the heater.....	3-39
<b>Figure 3-40</b> Power cable for the fan box in the APM30H.....	3-39
<b>Figure 3-41</b> ELU signal cable.....	3-40
<b>Figure 3-42</b> APM30H door status monitoring cable.....	3-41
<b>Figure 3-43</b> Monitoring signal cable for the fan on the front door.....	3-42
<b>Figure 3-44</b> Environment monitoring signal cable.....	3-43
<b>Figure 3-45</b> Monitoring signal transfer cable.....	3-44
<b>Figure 4-1</b> Exterior of the IBBS200T.....	4-2
<b>Figure 4-2</b> Internal structure of the IBBS200T.....	4-3
<b>Figure 4-3</b> Cable connections of the IBBS200T.....	4-4
<b>Figure 4-4</b> TEC cooler.....	4-5
<b>Figure 4-5</b> PDB.....	4-6
<b>Figure 4-6</b> External structure of the PDB.....	4-7
<b>Figure 4-7</b> CMUA.....	4-8
<b>Figure 4-8</b> Ports on a CMUA (plan view).....	4-8
<b>Figure 4-9</b> Positions of the DIP switches on the CMUA (plan view).....	4-11
<b>Figure 4-10</b> DIP switch settings of the CMUA in different cabinets.....	4-12
<b>Figure 4-11</b> Battery.....	4-12
<b>Figure 4-12</b> ELU.....	4-14
<b>Figure 4-13</b> Magnet part of the door status sensor.....	4-14
<b>Figure 4-14</b> Switch part of the door status sensor.....	4-15
<b>Figure 4-15</b> Installation position of the temperature sensor for the batteries in the IBBS200D.....	4-15
<b>Figure 4-16</b> Installation position of the temperature sensor for the batteries in the IBBS200T.....	4-16
<b>Figure 4-17</b> Smoke sensor.....	4-16
<b>Figure 4-18</b> Position for installing a smoke sensor in the TMC11H.....	4-17
<b>Figure 4-19</b> Position for installing a smoke sensor in the IBBS200D or IBBS200T.....	4-17
<b>Figure 4-20</b> PGND cable for the cabinet.....	4-19
<b>Figure 4-21</b> PGND cable for the modules.....	4-19
<b>Figure 4-22</b> Equipotential cable.....	4-20
<b>Figure 4-23</b> Input power cables for the batteries.....	4-21
<b>Figure 4-24</b> Power cable between the batteries and the copper bar in the junction box.....	4-21
<b>Figure 4-25</b> Inter-battery connection copper bar.....	4-21
<b>Figure 4-26</b> Input power cable for the TEC cooler.....	4-22
<b>Figure 4-27</b> Power transfer cable for the TEC cooler.....	4-22
<b>Figure 4-28</b> ELU signal cable.....	4-23

<b>Figure 4-29</b> Door status monitoring cable.....	4-23
<b>Figure 4-30</b> Monitoring signal cable for the battery cabinet.....	4-24
<b>Figure 5-1</b> Exterior of the IBBS200D.....	5-2
<b>Figure 5-2</b> Internal structure of the IBBS200D.....	5-3
<b>Figure 5-3</b> Cable connections of the IBBS200D.....	5-4
<b>Figure 5-4</b> Fan box.....	5-5
<b>Figure 5-5</b> PDB.....	5-6
<b>Figure 5-6</b> External structure of the PDB.....	5-7
<b>Figure 5-7</b> CMUA.....	5-8
<b>Figure 5-8</b> Ports on a CMUA (plan view).....	5-8
<b>Figure 5-9</b> Positions of the DIP switches on the CMUA (plan view).....	5-11
<b>Figure 5-10</b> DIP switch settings of the CMUA in different cabinets.....	5-12
<b>Figure 5-11</b> Battery.....	5-12
<b>Figure 5-12</b> ELU.....	5-14
<b>Figure 5-13</b> Heating film.....	5-14
<b>Figure 5-14</b> Magnet part of the door status sensor.....	5-15
<b>Figure 5-15</b> Switch part of the door status sensor.....	5-16
<b>Figure 5-16</b> Installation position of the temperature sensor for the batteries in the IBBS200D.....	5-16
<b>Figure 5-17</b> Installation position of the temperature sensor for the batteries in the IBBS200T.....	5-17
<b>Figure 5-18</b> Smoke sensor.....	5-17
<b>Figure 5-19</b> Position for installing a smoke sensor in the TMC11H.....	5-18
<b>Figure 5-20</b> Position for installing a smoke sensor in the IBBS200D or IBBS200T.....	5-18
<b>Figure 5-21</b> PGND cable for the cabinet.....	5-20
<b>Figure 5-22</b> PGND cable for the modules.....	5-20
<b>Figure 5-23</b> Equipotential cable.....	5-21
<b>Figure 5-24</b> Input power cables for the batteries.....	5-22
<b>Figure 5-25</b> Power cable between the batteries and the copper bar in the junction box.....	5-22
<b>Figure 5-26</b> Inter-battery connection copper bar.....	5-22
<b>Figure 5-27</b> Input power cable for the fans in the IBBS200D.....	5-23
<b>Figure 5-28</b> Power transfer cable for the fans in the IBBS200D.....	5-23
<b>Figure 5-29</b> Power cable for the heating film.....	5-23
<b>Figure 5-30</b> ELU signal cable.....	5-24
<b>Figure 5-31</b> Door status monitoring cable.....	5-25
<b>Figure 5-32</b> Monitoring signal cable for the battery cabinet.....	5-25
<b>Figure 6-1</b> TMC11H.....	6-2
<b>Figure 6-2</b> Internal structure of the TMC11H.....	6-3
<b>Figure 6-3</b> Cable connections of the TMC11H.....	6-4
<b>Figure 6-4</b> Fan Box.....	6-5
<b>Figure 6-5</b> Fan.....	6-6
<b>Figure 6-6</b> HPML.....	6-7
<b>Figure 6-7</b> Ports on the panel of an HPML.....	6-7
<b>Figure 6-8</b> CMUA.....	6-9

<b>Figure 6-9</b> Ports on a CMUA (plan view).....	6-9
<b>Figure 6-10</b> Positions of the DIP switches on the CMUA (plan view).....	6-12
<b>Figure 6-11</b> DIP switch settings of the CMUA in different cabinets.....	6-13
<b>Figure 6-12</b> DCDU-03.....	6-13
<b>Figure 6-13</b> Ports on the panel of the DCDU-03.....	6-15
<b>Figure 6-14</b> Core of the heat exchanger.....	6-16
<b>Figure 6-15</b> Junction box.....	6-17
<b>Figure 6-16</b> Structure of the junction box.....	6-17
<b>Figure 6-17</b> ELU.....	6-18
<b>Figure 6-18</b> Heater.....	6-18
<b>Figure 6-19</b> Magnet part of the door status sensor.....	6-19
<b>Figure 6-20</b> Switch part of the door status sensor.....	6-20
<b>Figure 6-21</b> Smoke sensor.....	6-20
<b>Figure 6-22</b> Position for installing a smoke sensor in the TMC11H.....	6-21
<b>Figure 6-23</b> Position for installing a smoke sensor in the IBBS200D or IBBS200T.....	6-21
<b>Figure 6-24</b> Equipotential cable.....	6-23
<b>Figure 6-25</b> Input power cable for the TMC11H (1).....	6-24
<b>Figure 6-26</b> Input power cable for the TMC11H (2).....	6-24
<b>Figure 6-27</b> Power cable for the fan box in the TMC11H.....	6-25
<b>Figure 6-28</b> ELU signal cable.....	6-25
<b>Figure 6-29</b> Door status monitoring cable.....	6-26
<b>Figure 6-30</b> Monitoring signal cable for the fan on the front door.....	6-26
<b>Figure 7-1</b> SLPU.....	7-2
<b>Figure 7-2</b> Slots of the SLPU.....	7-2
<b>Figure 7-3</b> UELP panel.....	7-3
<b>Figure 7-4</b> DIP switch on the UELP.....	7-4
<b>Figure 7-5</b> Panel of the UFLP.....	7-5
<b>Figure 7-6</b> Panel of the USLP2.....	7-6
<b>Figure 7-7</b> Mapping relationship between the pins in the input and output ports on the USLP2.....	7-6
<b>Figure 8-1</b> Installation position of the PMU.....	8-4
<b>Figure 8-2</b> Removing the PMU.....	8-5
<b>Figure 8-3</b> Setting DIP switches .....	8-5
<b>Figure 8-4</b> Installing the PMU.....	8-6
<b>Figure 8-5</b> Installation position of the PSU.....	8-7
<b>Figure 8-6</b> Removing the PSU.....	8-8
<b>Figure 8-7</b> Installing the PSU.....	8-8
<b>Figure 8-8</b> Replacing the EPS subrack.....	8-10
<b>Figure 8-9</b> Installation position of the AC surge protector.....	8-12
<b>Figure 8-10</b> Removing the surge protector.....	8-12
<b>Figure 8-11</b> Installation position of the fuse and spare fuse box.....	8-13
<b>Figure 8-12</b> Position of the extraction tool in the cabinet.....	8-14
<b>Figure 8-13</b> Removing the faulty fuse.....	8-15



<b>Figure 8-14</b> Taking the spare fuse.....	8-15
<b>Figure 8-15</b> Top view of the fan box in the APM30H.....	8-17
<b>Figure 8-16</b> Removing the fan box from the APM30H.....	8-17
<b>Figure 8-17</b> Removing the faulty core of the heat exchanger.....	8-19
<b>Figure 8-18</b> Removing the wind guide trough.....	8-19
<b>Figure 8-19</b> Position of the fan in the APM30H.....	8-21
<b>Figure 8-20</b> Remove the faulty cable for the fan.....	8-22
<b>Figure 8-21</b> Removing the air duct.....	8-22
<b>Figure 8-22</b> Removing the heat exchanger.....	8-23
<b>Figure 8-23</b> Removing the cover plate of the fan cavity.....	8-23
<b>Figure 8-24</b> Removing the faulty fan.....	8-24
<b>Figure 8-25</b> Position of the fan in the APM30H.....	8-25
<b>Figure 8-26</b> Removing the fan from the front door of the APM30H.....	8-26
<b>Figure 8-27</b> Removing the faulty heater.....	8-28
<b>Figure 8-28</b> Installing the new heater.....	8-29
<b>Figure 8-29</b> Top view of the fan box in the TMC11H.....	8-30
<b>Figure 8-30</b> Removing the fan box from the TMC11H.....	8-30
<b>Figure 8-31</b> Removing the cover plate from the batteries.....	8-32
<b>Figure 8-32</b> Removing cables from the batteries.....	8-32
<b>Figure 8-33</b> Installation position of the TEC cooler.....	8-34
<b>Figure 8-34</b> Removing the retention screws from the CMUA.....	8-35
<b>Figure 8-35</b> Removing the faulty TEC cooler.....	8-35
<b>Figure 8-36</b> Installation position of the fan on the front door of the IBBS200D.....	8-37
<b>Figure 8-37</b> Removing the fan box from the IBBS200D.....	8-38
<b>Figure 8-38</b> Removing the faulty fan.....	8-38
<b>Figure 8-39</b> DIP settings of the CMUA in different cabinets.....	8-39
<b>Figure 8-40</b> Installation position of the CMUA.....	8-40
<b>Figure 8-41</b> Removing the fan box from the IBBS200D.....	8-41
<b>Figure 8-42</b> Removing the CMUA box from the IBBS200T.....	8-41
<b>Figure 8-43</b> Positions for attaching the bar codes of the CMUA.....	8-42
<b>Figure 8-44</b> Opening the housing of the ELU.....	8-43
<b>Figure 8-45</b> Removing the faulty ELIA.....	8-44



## Tables

<b>Table 2-1</b>	Functions of the APM30H.....	2-2
<b>Table 2-2</b>	DC power distribution functions of the APM30H.....	2-3
<b>Table 2-3</b>	Functions of the IBBS200T.....	2-5
<b>Table 2-4</b>	Functions of the IBBS200D.....	2-5
<b>Table 2-5</b>	Functions of the TMC11H.....	2-6
<b>Table 2-6</b>	Electrical specifications of the APM30H.....	2-9
<b>Table 2-7</b>	Electrical specifications of the TMC11H.....	2-11
<b>Table 2-8</b>	Engineering specifications of the APM30H.....	2-12
<b>Table 2-9</b>	Engineering specifications of the IBBS200T.....	2-13
<b>Table 2-10</b>	Engineering specifications of the IBBS200D.....	2-13
<b>Table 2-11</b>	Engineering specifications of the TMC11H.....	2-14
<b>Table 2-12</b>	Surge protection specifications of the APM30H.....	2-15
<b>Table 2-13</b>	Environmental requirements of the APM30H.....	2-16
<b>Table 2-14</b>	Environmental requirements of the IBBS200T.....	2-17
<b>Table 2-15</b>	Environmental requirements of the IBBS200D.....	2-18
<b>Table 3-1</b>	Technical specifications of the fan.....	3-7
<b>Table 3-2</b>	Specifications of the ports on the panel of an HPML.....	3-8
<b>Table 3-3</b>	Ports on a CMUA.....	3-11
<b>Table 3-4</b>	LEDs.....	3-13
<b>Table 3-5</b>	DC power distribution functions of the EPS subrack used for a distributed base station.....	3-16
<b>Table 3-6</b>	DC power distribution functions of the EPS used for a separated macro base station.....	3-16
<b>Table 3-7</b>	Ports and switch on a PMU.....	3-19
<b>Table 3-8</b>	LEDs on the panel of a PMU.....	3-19
<b>Table 3-9</b>	LEDs on the panel of the PSU (AC/DC).....	3-22
<b>Table 3-10</b>	Components of the power equipment (DC/DC).....	3-23
<b>Table 3-11</b>	LEDs on the panel of the PSU (DC/DC).....	3-24
<b>Table 3-12</b>	Ports and terminals on the power subrack (DC/DC).....	3-26
<b>Table 3-13</b>	Technical specifications of the SOU.....	3-30
<b>Table 3-14</b>	Technical specifications of a smoke sensor.....	3-34
<b>Table 3-15</b>	PGND cables.....	3-36
<b>Table 3-16</b>	Specifications of different types of AC input power cables.....	3-37
<b>Table 3-17</b>	Pin assignment for the wires of the power cable for the SOU.....	3-38
<b>Table 3-18</b>	Pin assignment for the wires of the power cable for the heater.....	3-39

<b>Table 3-19</b> Pin assignment for the wires of the ELU signal cable.....	3-40
<b>Table 3-20</b> Pin assignment for the wires of the monitoring signal cable for the fan on the front door.....	3-42
<b>Table 3-21</b> Pin assignment for the wires of the environment monitoring signal cable.....	3-43
<b>Table 3-22</b> Pin assignment of the monitoring signal transfer cable.....	3-45
<b>Table 4-1</b> Ports on a CMUA.....	4-9
<b>Table 4-2</b> LEDs.....	4-11
<b>Table 4-3</b> Technical specifications of the battery.....	4-13
<b>Table 4-4</b> Technical specifications of a smoke sensor.....	4-18
<b>Table 4-5</b> PGND cables.....	4-19
<b>Table 4-6</b> Equipotential cable.....	4-20
<b>Table 4-7</b> Pin assignment for the wires of the ELU signal cable.....	4-23
<b>Table 4-8</b> Pin assignment for the wires of the monitoring signal cable for the battery cabinet.....	4-24
<b>Table 5-1</b> Ports on a CMUA.....	5-9
<b>Table 5-2</b> LEDs.....	5-11
<b>Table 5-3</b> Technical specifications of the battery.....	5-13
<b>Table 5-4</b> Technical specifications of a smoke sensor.....	5-19
<b>Table 5-5</b> PGND cables.....	5-21
<b>Table 5-6</b> Equipotential cable.....	5-21
<b>Table 5-7</b> Pin assignment for the wires of the ELU signal cable.....	5-24
<b>Table 5-8</b> Pin assignment for the wires of the monitoring signal cable for the battery cabinet.....	5-25
<b>Table 6-1</b> Technical specifications of the fan.....	6-6
<b>Table 6-2</b> Specifications of the ports on the panel of an HPML.....	6-7
<b>Table 6-3</b> Ports on a CMUA.....	6-10
<b>Table 6-4</b> LEDs.....	6-12
<b>Table 6-5</b> DC power distribution functions of the DCDU-03.....	6-14
<b>Table 6-6</b> Ports on the panel of the DCDU-03.....	6-15
<b>Table 6-7</b> Technical specifications of a smoke sensor.....	6-22
<b>Table 6-8</b> Equipotential cable.....	6-23
<b>Table 6-9</b> Pin assignment for the wires of the ELU signal cable.....	6-25
<b>Table 6-10</b> Pin assignment for the wires of the monitoring signal cable for the fan on the front door.....	6-27
<b>Table 7-1</b> Configuration principles of the SLPU (1).....	7-3
<b>Table 7-2</b> Configuration principles of the SLPU (2).....	7-3
<b>Table 7-3</b> Ports of the UELP.....	7-4
<b>Table 7-4</b> DIP switch on the UELP.....	7-5
<b>Table 7-5</b> Ports on the panel of the UFLP.....	7-5
<b>Table 7-6</b> Ports on the panel of the USLP2.....	7-6
<b>Table 7-7</b> Mapping relationship between the pins in the input and output ports on the USLP2.....	7-7
<b>Table 8-1</b> Routine maintenance items.....	8-3

# 1 Changes in the APM30H&TMC11H&IBBS200D&IBBS200T (Ver.B) User Guide

---

This describes the changes in the *APM30H&TMC11H&IBBS200D&IBBS200T(Ver.B) User Guide*.

## 07 (2010-08-30)

This is the sixth commercial release.

Compared with issue 06 (2010-06-30), this issue includes the following new topics:

- **3.4.10 Smoke Sensor (Optional)**

Compared with issue 06 (2010-06-30), this issue incorporates the following changes:

Topic	Change Description
<b>HPMI</b>	The specifications of the ports on the HPMI are modified.
<b>CMUA</b>	The Ports descriptions on the CMUA are modified.
<b>PMU</b>	The Ports and switch on a PMU are modified.

Compared with issue 06 (2010-06-30), no information is deleted.

## 06 (2010-06-30)

This is the fifth commercial release.

Compared with issue 05 (2010-05-10), this issue includes the following new topics:

- **4.4.7 Temperature Sensor for the Batteries**

Compared with issue 05 (2010-05-10), this issue incorporates the following changes:

Topic	Change Description
<a href="#">About This Document</a>	The name of the cabinet is changed, and the manual name is modified accordingly.

Compared with issue 05 (2010-05-10), no information is deleted.

## 05 (2010-05-10)

This is the fourth commercial release.

Compared with issue 04 (2010-04-10), this issue includes the following new topics:

- [8.9.1 Querying the Type of Fan](#)
- [8.9.2 Replacing the Fan for the Modularized Heat Exchanger Installed on the Front Door](#)

Compared with issue 04 (2010-04-10), this issue incorporates the following changes:

Topic	Change Description
<a href="#">8.15 Replacing the CMUA</a>	Some descriptions are optimized.
<a href="#">8.13 Replacing the TEC Cooler of the IBBS200T</a>	
<a href="#">8.16 Replacing the ELIA</a>	
<a href="#">8.9.3 Replacing the Fan for the Non-Modularized Heat Exchanger Installed on the Front Door</a>	<ul style="list-style-type: none"> <li>• The title is changed.</li> <li>• <a href="#">8.9.1 Querying the Type of Fan</a> is added.</li> </ul>

Compared with issue 04 (2010-04-10), no information is deleted.

## 04 (2010-04-10)

This is the third commercial release.

Compared with issue 03 (2009-12-30), no information is added.

Compared with issue 03 (2009-12-30), this issue incorporates the following changes:

Topic	Change Description
<a href="#">PMU</a>	Some descriptions of the DIP switches are optimized.
<a href="#">3.4.7 Heater (Optional)</a>	The technical specifications of the heater are modified.
<a href="#">2.1 Functions of the APM30H, IBBS200T, IBBS200D, and TMC11H</a>	The DC power distribution functions of the APM30H are modified.

Topic	Change Description
<a href="#">EPS Subrack</a>	The DC power distribution functions of the EPS subrack are modified.
<a href="#">8.6 Replacing the Fuse</a>	Some descriptions and figures are optimized.
<a href="#">8.12 Replacing the Batteries</a>	

Compared with issue 03 (2009-12-30), no information is deleted.

## 03 (2009-12-30)

This is the second commercial release.

Compared with issue 02 (2009-09-30), no information is added.

Compared with issue 02 (2009-09-30), this issue incorporates the following changes:

Topic	Change Description
<a href="#">2.3.1 Electrical Specifications of the APM30H and TMC11H</a>	The known defects are cleared.
<a href="#">2.3.4 Environmental Requirements of the APM30H, IBBS200T, IBBS200D, and TMC11H</a>	
<a href="#">7.2 Configuration of the SLPU</a>	The configuration principles of the SLPU are modified.

Compared with issue 02 (2009-09-30), the following topics are deleted in this issue:

- Replacing the Core of the Heat Exchanger

## 02 (2009-09-30)

This is the first commercial release.

Compared with issue 01 (2009-08-14), no information is added.

Compared with issue 01 (2009-08-14), the known defects are cleared.

Compared with issue 01 (2009-08-14), no information is deleted.

## 01 (2009-08-14)

This is the draft release.





# 2 Overview of the APM30H Family

---

## About This Chapter

The APM30H family consists of the APM30H, TMC11H, IBBS200T, and IBBS200D.

### [2.1 Functions of the APM30H, IBBS200T, IBBS200D, and TMC11H](#)

The APM30H, IBBS200T, IBBS200D, and TMC11H provides auxiliary solutions to the outdoor applications of Huawei wireless products. It supplies DC power to and provides backup power for distributed or separated base stations in outdoor scenarios. It can also be used for the outdoor applications of the indoor BBUs and transmission equipment.

### [2.2 Application Scenarios of the APM30H Family](#)

The APM30H family can work with the distributed or separated base stations, meeting the requirements in different scenarios.

### [2.3 Technical Specifications of the APM30H Family](#)

The technical specifications of the APM30H family consist of the electrical specifications, engineering specifications, surge protection specifications, and specifications concerning the environmental requirements.

## 2.1 Functions of the APM30H, IBBS200T, IBBS200D, and TMC11H

The APM30H, IBBS200T, IBBS200D, and TMC11H provides auxiliary solutions to the outdoor applications of Huawei wireless products. It supplies DC power to and provides backup power for distributed or separated base stations in outdoor scenarios. It can also be used for the outdoor applications of the indoor BBUs and transmission equipment.

### Functions of the APM30H

**Table 2-1** describes the functions of the APM30H.

**Table 2-1** Functions of the APM30H

Function	Description
Providing space for the customer equipment	<p>The APM30H provides a 5 U to 7 U space for the customer equipment.</p> <ul style="list-style-type: none"> <li>• Providing a 7 U space when the APM30H is not configured with an internal battery pack</li> <li>• Providing a 5 U space when the APM30H is configured with an internal 48 V 24 Ah battery pack</li> </ul>
Providing backup power	<p>The APM30H can connect to a single battery cabinet to support up to the 48 V 184 Ah battery pack or connect to two stacked battery packs to support up to 48 V 368 Ah battery pack.</p>
Providing built-in PSUs	<ul style="list-style-type: none"> <li>• The PSU converts the input AC mains power into -48 V DC power.</li> <li>• The PSU is hot-swappable.</li> </ul>
Providing a built-in PMU	<ul style="list-style-type: none"> <li>• The PMU manages the PSUs and implements the battery charging and discharging functions.</li> <li>• The PMU provides RS485 communication ports and dry contact alarm ports for remote and unattended monitoring.</li> <li>• The PMU supports the battery low voltage disconnect (BLVD) and load low voltage disconnect (LLVD) functions.</li> <li>• The PMU is hot-swappable.</li> </ul>
Supporting AC input	<p>The APM30H provides a built-in AC/DC power system, which supports single-phase 220 V AC, three-phase 220 V AC, and dual-live wire 110 V AC.</p>
Distributing AC power	<p>Through the EPS, the AC power is distributed into two AC outputs:</p> <ul style="list-style-type: none"> <li>• One output provides AC power for the SOU.</li> <li>• The other output is connected to the AC power distribution box on the left of the cabinet. Through the power distribution, four AC outputs are provided to the heater or heating film.</li> </ul>

Function	Description
Distributing DC power	For details, see <a href="#">Table 2-2</a> .
Providing surge protection for the power supply and signal ports	External surge protection modules for AC/DC power ports and surge protection circuits for signal ports provide safe and reliable surge protection and lightning protection.
Dissipating heat	Heat dissipation of the APM30H is based on the heat exchanger system that consists of a core and two air circulation fans. This can effectively prevent dust from entering the cabinet. The APM30H can also work with the diesel generator.
Supporting the grounding	The grounding busbar for the cabinet and the PGND cables for the components are all connected to the grounding bar of the cabinet.
Reporting the cabinet type automatically	The type of the cabinet is automatically reported through the ELU.

[Table 2-2](#) describes the DC power distribution functions of the APM30H.

**Table 2-2** DC power distribution functions of the APM30H

Applic ation Scenar io	DC Outp ut	Power Equipme nt	Silkscre en on the Output Termina l	Protecti on Compo nent Type	Specific ation	Quantit y	DC Output Termina l
Distrib uted base station	Six LLVD output s	RRU	RRU0 to RRU5	MCB	20 A	6	Easy power receptacle (pressfit type) connector
	Nine BLV D output s	TMC	TMC	Fuse	25 A	1	
		FAN unit	LOAD0		15 A	1	
		BBU	LOAD1 and LOAD2			2	
		TEC/FAN (in the battery cabinet)	LOAD3			1	
		TM	LOAD4 to LOAD7		5 A	4	

Application Scenario	DC Output	Power Equipment	Silkscreen on the Output Terminal	Protection Component Type	Specification	Quantity	DC Output Terminal
	Battery power backup	BAT	-	MCB	100 A	1	Power series 120 connector (grey)
Separated macro base station	Two LLVD outputs	RFC	-	MCB	80 A	2	Power series 120 connector (blue)
	Nine BLVD outputs	TMC	TMC	Fuse	25 A	1	Easy power receptacle (pressfit type) connector
		FAN unit	LOAD0		15 A	1	
		BBU	LOAD1 and LOAD2			2	
		TEC/FAN (in the battery cabinet)	LOAD3			1	
		TM	LOAD4 to LOAD7		5 A	4	
	Battery power backup	BAT	-	MCB	100 A	1	Power series 120 connector (grey)

## Functions of the IBBS200T

**Table 2-3** describes the functions of the IBBS200T.

**Table 2-3** Functions of the IBBS200T

Function	Description
Providing backup power	<ul style="list-style-type: none"> <li>When configured with 48 V 50 Ah batteries, the IBBS200T can provide DC backup power of 48 V 50 Ah or 48 V 100 Ah (by housing two battery packs).</li> <li>When configured with 48 V 92 Ah batteries, the IBBS200T can provide DC backup power of 48 V 92 Ah or 48 V 184 Ah (by housing two battery packs).</li> </ul>
Reporting the cabinet type automatically	The type of the cabinet is automatically reported through the ELU.
Providing a built-in TEC cooler	The TEC cooler enables the IBBS200T to adapt to high ambient temperature and maintains a proper range of temperature for the cabinet.
Monitoring the alarm signals in a centralized way	The CMUA collects the alarm signals from the components such as the door status sensor, temperature sensor of the battery, fan, and smoke sensor. Then, the CMUA transmits the alarm signals to the base station.

## Functions of the IBBS200D

**Table 2-4** describes the functions of the IBBS200D.

**Table 2-4** Functions of the IBBS200D

Function	Description
Providing backup power	<ul style="list-style-type: none"> <li>When configured with 48 V 50 Ah batteries, the IBBS200D can provide DC backup power of 48 V 50 Ah or 48 V 100 Ah (by housing two battery packs).</li> <li>When configured with 48 V 92 Ah batteries, the IBBS200D can provide DC backup power of 48 V 92 Ah or 48 V 184 Ah (by housing two battery packs).</li> </ul>
Reporting the cabinet type automatically	The type of the cabinet is automatically reported through the ELU.
Providing built-in fans	The fans in the cabinet speed up the circulation of the air inside and outside the cabinet and keep the temperature in the cabinet in a proper range
Monitoring the alarm signals in a centralized way	The CMUA collects the alarm signals from the components such as the door status sensor, temperature sensor of the battery, fan, and smoke sensor. Then, the CMUA transmits the alarm signals to the base station.

## Functions of the TMC11H

**Table 2-5** describes the functions of the TMC11H.

**Table 2-5** Functions of the TMC11H

Function	Description
Providing -48 V DC power	The TMC11H is configured with a built-in DCDU-03 and performs the following functions: <ul style="list-style-type: none"><li>• Supporting one -48 V DC input</li><li>• Providing nine -48 V DC outputs (LOAD0 to LOAD8)</li></ul>
Providing space for customer equipment	<ul style="list-style-type: none"><li>• The TMC11H provides 11 U space for customer equipment.</li><li>• If the heater is installed, the TMC11H provides 10 U space for customer equipment.</li></ul>
Reporting alarms	The TMC11H provides the following two dry contact alarm ports for remote and unmanned monitoring: One of the dry contact alarm ports is connected to the door status sensor. An open circuit indicates that the connection is faulty, whereas a closed circuit indicates that the connection is normal.
Reporting the cabinet type automatically	The type of the cabinet is automatically reported through the ELU.

## 2.2 Application Scenarios of the APM30H Family

The APM30H family can work with the distributed or separated base stations, meeting the requirements in different scenarios.

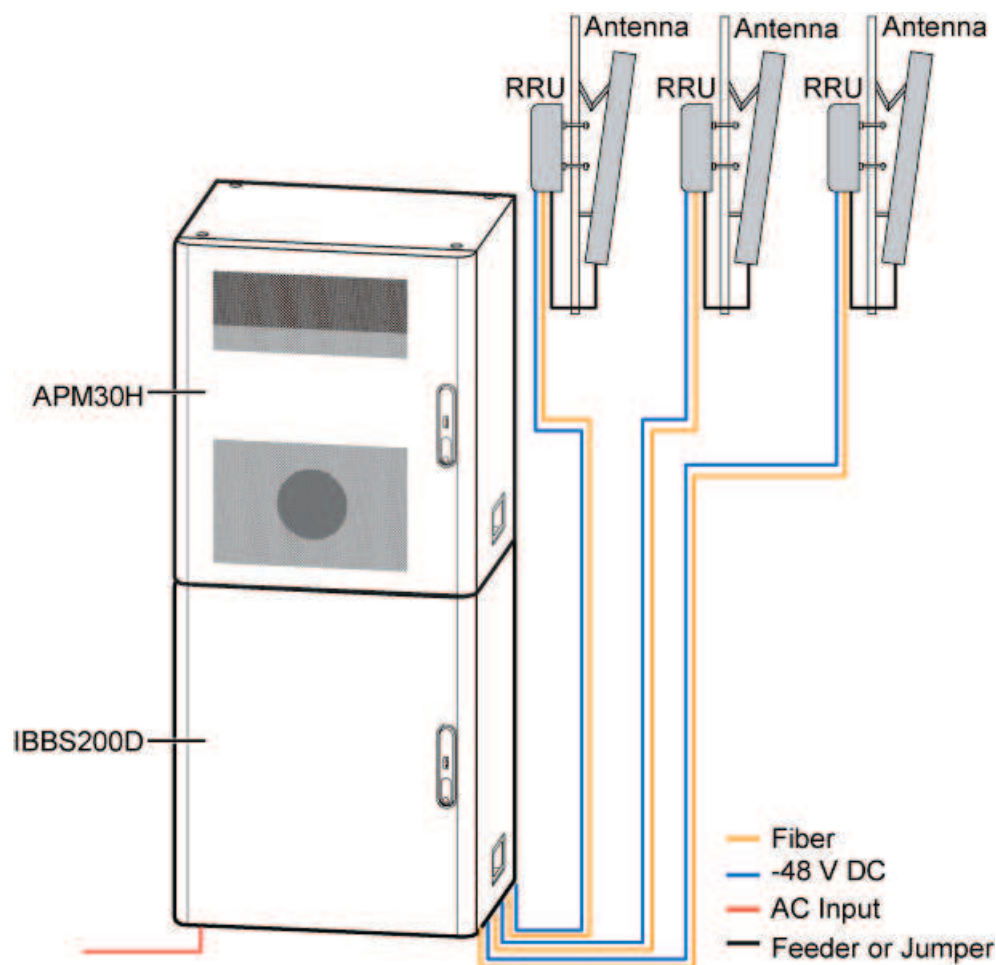
### APM30H Working with a Distributed Base Station

The scenario in which the APM30H works with a distributed base station is as follows:

- The APM30H provides the 7 U space for the BBU and transmission equipment. The built-in power system of the APM30H supplies -48 V DC power to the distributed base station and transmission equipment and charges the batteries in the battery cabinet.
- When the mains power is unavailable, the batteries in the IBBS200T supplies -48 V DC power to the distribution base station and transmission equipment.

**Figure 2-1** shows the scenario in which the APM30H stacked on the battery cabinet works with a distributed base station.

**Figure 2-1** APM30H (stacked on the battery cabinet) working with a distributed base station



**NOTE**

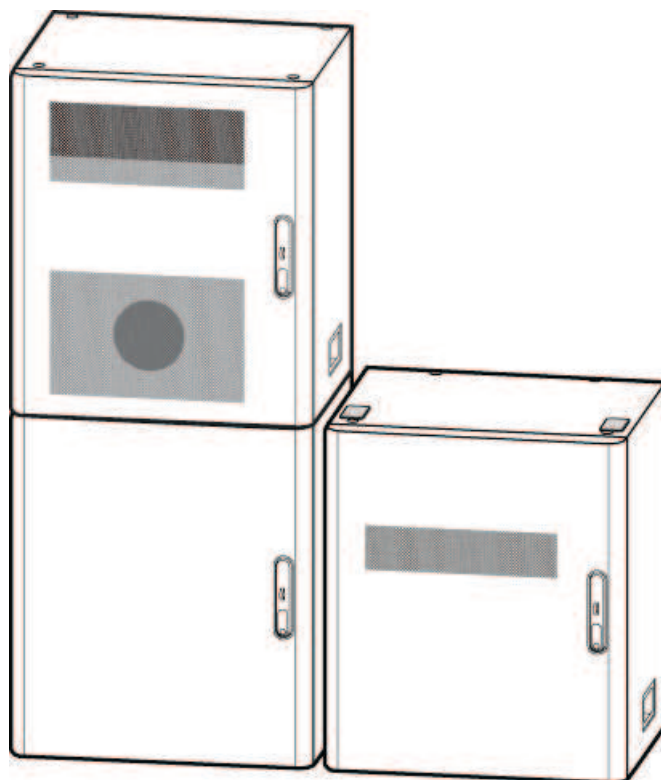
When the APM30H works with a distributed base station, it can be configured with the IBBS200D or IBBS200T. The [Figure 2-1](#) takes the IBBS200D as an example.

## APM30H working with a separated macro base station

The scenario in which the APM30H works with a separated macro base station is described as follows:

- The APM30H provides a 7 U space for the BBU and transmission equipment. The built-in power system of the APM30H supplies -48 V DC power to the BBU, RFU, and transmission equipment and charges the batteries in the battery cabinet.
- The APM30H reports the alarms related to fans, door status, DCDU, and batteries in the battery cabinet.

[Figure 2-2](#) shows the scenarios in which the APM30H works with separated macro base stations.

**Figure 2-2** APM30H working with a separated macro base station**NOTE**

When the APM30H works with a separated macro base station, it can be configured with the IBBS200D or IBBS200T. [Figure 2-1](#) takes the IBBS200D as an example.

## 2.3 Technical Specifications of the APM30H Family

The technical specifications of the APM30H family consist of the electrical specifications, engineering specifications, surge protection specifications, and specifications concerning the environmental requirements.

### 2.3.1 Electrical Specifications of the APM30H and TMC11H

The electrical specifications involve AC input, DC output, protection, and Permissible heat consumption in the cabinet.

### 2.3.2 Engineering Specifications of the APM30H, IBBS200T, IBBS200D, and TMC11H

The engineering specifications involve the cabinet weight, cabinet dimensions, base dimensions, space for the customer equipment, space for cabling and maintenance space in front of the cabinet, and installation options.

### 2.3.3 Surge Protection Specifications of the APM30H

The surge protection specifications of the APM30H involve the surge protection for the AC input port, surge protection for the DC output port, and surge protection for signal ports.

### 2.3.4 Environmental Requirements of the APM30H, IBBS200T, IBBS200D, and TMC11H

The environmental requirements involve the operating temperature, relative humidity, altitude, and storage temperature.



## 2.3.1 Electrical Specifications of the APM30H and TMC11H

The electrical specifications involve AC input, DC output, protection, and Permissible heat consumption in the cabinet.

### Electrical Specifications of the APM30H

**Table 2-6** describes the electrical specifications of the APM30H.

**Table 2-6** Electrical specifications of the APM30H

Item		Specification
AC input	Typical input voltage	200 V AC to 240 V AC (single-phase 220 V AC)
		200 V AC to 240 V AC or 346 V AC to 415 V AC (three-phase 220 V AC or 380 V AC)
		100 V AC to 120 V AC or 200 V AC to 240 V AC (dual-live-wire 110 V AC)
		120 V AC to 127 V AC or 208 V AC to 220 V AC (dual-live-wire 120 V AC)
	Operating voltage range	176 V AC to 290 V AC (single-phase 220 V AC)
		176 V AC to 290 V AC or 304 V AC to 500 V AC (three-phase 220 V AC)
		90 V AC to 135 V AC or 180 V AC to 270 V AC (dual-live-wire 110 V AC)
		105 V AC to 150 V AC or 176 V AC to 260 V AC (dual-live-wire 120 V AC)
	Frequency of the input voltage	50 Hz or 60 Hz
	Maximum input current	16 A (three-phase 220 V AC or 380 V AC)
		40 A (dual-live-wire 110 V AC, dual-live-wire 120 V AC, or single-phase 220 V AC)
	Input mode	<ul style="list-style-type: none"> <li>• Three-phase 220 V AC or 380 V AC</li> <li>• Dual-live-wire 110 V AC</li> <li>• Dual-live-wire 120 V AC</li> <li>• Single-phase 220 V AC</li> </ul>

Item		Specification
	AC input power	<p>The AC input power varies according to AC load.</p> <ul style="list-style-type: none"> <li>When the PSU is configured: <math>\leq 5,274</math> W</li> <li>When the PSU, heater, and heating film are configured: <math>\leq 6,074</math> W</li> <li>When the PSU, heater, heating film, and SOU are configured: <math>\leq 8,274</math> W</li> </ul>
DC output	Output voltage range	-43.2 V DC to -57 V DC
	Output current range	<ul style="list-style-type: none"> <li>When two PSUs are configured: 0 A to 60 A</li> <li>When three PSUs are configured: 0 A to 90 A</li> </ul>
	Typical output voltage	-53.5 V DC
	Number of DC outputs	<p>The number of DC outputs varies according to application scenario.</p> <ul style="list-style-type: none"> <li>When working with a distributed base station: 16 DC outputs</li> <li>When working with a separated base station: 12 DC outputs</li> </ul>
	DC output power	$\leq 3,200$ W (two active PSUs and + one standby PSU)
Protection	Input protection	<ul style="list-style-type: none"> <li>Overvoltage protection: The system generates an alarm when the input voltage reaches the AC overvoltage alarm threshold, which is 280 V by default.</li> <li>Undervoltage protection: The system generates an alarm when the input voltage is lower than the AC undervoltage alarm threshold, which is 180 V by default.</li> </ul>
	Output protection	<ul style="list-style-type: none"> <li>Overvoltage protection: The system generates an alarm when the busbar voltage reaches the DC overvoltage alarm threshold, which is -58 V by default.</li> <li>Undervoltage protection: The system generates an alarm when the busbar voltage is lower than the DC undervoltage alarm threshold, which is -45 V by default.</li> <li>Overcurrent protection and short-circuit protection</li> </ul>
Permissible heat consumption in the cabinet		$\leq 700$ W

## Electrical specifications of the TMC11H

**Table 2-7** describes the electrical specifications of the TMC11H.

**Table 2-7** Electrical specifications of the TMC11H

Item		Specification
DC input	Input voltage range	-38.4 V DC to -57 V DC
	Typical input voltage	-53.5 V DC
	Maximum input current	21 A
	Input mode	-48 V DC power input, supporting M6 2-hole OT terminals
	DC input power	≤ 800 W
DC output	DC distribution	Nine -48 V DC outputs: LOAD0 to LOAD8 for the customer equipment <b>NOTE</b> When configured with different types of DCDU-03, the TMC11H can meet different current requirements.
	Typical output voltage	-48 V DC
Protection		Overcurrent and short-circuit protection for DC power distribution
Permissible heat consumption in the cabinet		≤ 700 W

## 2.3.2 Engineering Specifications of the APM30H, IBBS200T, IBBS200D, and TMC11H

The engineering specifications involve the cabinet weight, cabinet dimensions, base dimensions, space for the customer equipment, space for cabling and maintenance space in front of the cabinet, and installation options.

### Engineering Specifications of the APM30H

**Table 2-8** describes the engineering specifications of the APM30H.

**Table 2-8** Engineering specifications of the APM30H

Item	Specification	Remarks
Weight	$\leq 72$ kg	Total weight of the equipment <ul style="list-style-type: none"> <li>Including the cabinet frame, inner air circulation fan, outer air circulation fan, core of the heat exchanger, EPS4890B-4830A, and cables</li> <li>Excluding the BBU, transmission equipment of the customer, PMU, and PSU</li> </ul>
	$\leq 91$ kg	Weight of the cabinet in full configuration <ul style="list-style-type: none"> <li>Including the equipment, one PMU, three PSUs, and one BBU</li> <li>Excluding the transmission equipment of the customer</li> </ul>
Dimensions of the cabinet (width x height x depth)	600 mm x 700 mm x 480 mm	The base is not included.
Dimensions of the base (width x height x depth)	600 mm x 200 mm x 434 mm	-
Space for the customer equipment (width x height x depth)	19-inch x 7 U x 310 mm	The depth is measured from 30 mm in front of the column to the back of the cabinet, and the total measurement of the depth is 310 mm.
Space for cabling and maintenance space in front of the cabinet	70 mm	-
Installation option	The APM30H can be installed on the ground, on a wall, or on a pole, or stacked with the RFC or the IBBS200D/IBBS200T.	When installed in stack mode, the APM30H should be placed on the RFC or the IBBS200D/IBBS200T.

## Engineering Specifications of the IBBS200T

**Table 2-9** describes the engineering specifications of the IBBS200T.

**Table 2-9** Engineering specifications of the IBBS200T

Item	Specification	Remarks
Cabinet weight	$\leq 70$ kg	Built-in batteries are not configured.
Battery weight	Supporting front maintenance of 48 V 50 Ah or 48 V 92 Ah batteries <ul style="list-style-type: none"> <li>• A single 12 V 50 Ah battery: 21.5 kg</li> <li>• A single 12 V 92 Ah battery: 33.5 kg</li> </ul> <b>NOTE</b> The batteries of different manufacturers may have different weights. The following description is based on common batteries.	Two 48 V 92 Ah battery packs can be connected in parallel to provide 48 V 184 Ah backup power.
Dimensions of the cabinet (width x height x depth)	600 mm x 700 mm x 480 mm	Excluding the 206 mm that is stretched out of the cabinet on the front door.
Base dimensions (width x height x depth)	600 mm x 200 mm x 480 mm	-
Installation option	The IBBS200T can be installed on the ground or stacked with the TMC11H or APM30H.	When installed in stack mode, the IBBS200T should be placed below the TMC11H or APM30H.

## Engineering Specifications of the IBBS200D

**Table 2-10** describes the engineering specifications of the IBBS200D.

**Table 2-10** Engineering specifications of the IBBS200D

Item	Specification	Remarks
Cabinet weight	$\leq 50$ kg	Built-in batteries are not configured.

Item	Specification	Remarks
Battery weight	Supporting front maintenance of 48 V 50 Ah or 48 V 92 Ah batteries <ul style="list-style-type: none"> <li>• A single 12 V 50 Ah battery: 21.5 kg</li> <li>• A single 12 V 92 Ah battery: 33.5 kg</li> </ul> <b>NOTE</b> The batteries of different manufacturers may have different weights. The following description is based on common batteries.	Two 48 V 92 Ah battery packs can be connected in parallel to provide 48 V 184 Ah backup power.
Dimensions of the cabinet (width x height x depth)	600 mm x 700 mm x 480 mm	-
Base dimensions (width x height x depth)	600 mm x 200 mm x 480 mm	
Installation option	The IBBS200D can be installed on the ground or stacked with the RFC or APM30H.	When installed in stack mode, the IBBS200D should be placed below the RFC or APM30H.

## Engineering Specifications of the TMC11H

**Table 2-11** describes the engineering specifications of the TMC11H.

**Table 2-11** Engineering specifications of the TMC11H

Item	Specification	Remarks
Weight	$\leq 57$ kg	Total weight of the equipment <ul style="list-style-type: none"> <li>• Including the cabinet frame, fan box, and core of the heat exchanger</li> <li>• Excluding the BBU and transmission equipment of the customer</li> </ul>
Dimensions of the cabinet (width x height x depth)	600 mm x 700 mm x 480 mm	The appearance and base of the TMC11H are the same as those of the APM30H.
Base dimensions (width x height x depth)	600 mm x 200 mm x 480 mm	

Item	Specification	Remarks
Space for the customer equipment (width x height x depth)	19-inch x 11 U x 310 mm	The depth is measured from 30 mm in front of the column to the back of the cabinet, and the total measurement of the depth is 310 mm.
Space for cabling and maintenance space in front of the cabinet	70 mm	-
Installation option	The TMC11H can be installed on the ground, on a wall, or on a pole, or stacked with the RFC or the IBBS200D/IBBS200T.	When installed in stack mode, the TMC11H should be placed on the RFC or the IBBS200D/IBBS200T.

### 2.3.3 Surge Protection Specifications of the APM30H

The surge protection specifications of the APM30H involve the surge protection for the AC input port, surge protection for the DC output port, and surge protection for signal ports.

#### Surge Protection Specifications of the APM30H

**Table 2-12** describes the surge protection specifications of the APM30H.

**Table 2-12** Surge protection specifications of the APM30H

Item	Specification
Surge protection for the AC input port	In differential mode: <ul style="list-style-type: none"> <li>Nominal through-current capacity <math>I_n</math> (8/20 <math>\mu</math>s) 25 kA</li> <li>Maximum through-current capacity <math>I_{max}</math> (8/20 <math>\mu</math>s) 60 kA</li> </ul>
	In common mode: <ul style="list-style-type: none"> <li>Nominal through-current capacity <math>I_n</math> (8/20 <math>\mu</math>s) 25 kA</li> <li>Maximum through-current capacity <math>I_{max}</math> (8/20 <math>\mu</math>s) 60 kA</li> </ul>
Surge protection for the DC output port	<ul style="list-style-type: none"> <li>In differential mode (8/20 <math>\mu</math>s): 10 kA</li> <li>In common mode (8/20 <math>\mu</math>s): 15 kA</li> </ul> <p>The DC output corresponds to the secondary load.</p> <p><b>NOTE</b> The surge protection class for the shielding layer of the RRU power cable is 40 kA.</p>

Item	Specification
Surge protection for signal ports	E1/T1 port: <ul style="list-style-type: none"> <li>• In differential mode (8/20 <math>\mu</math>s): 3 kA</li> <li>• In common mode (8/20 <math>\mu</math>s): 5 kA</li> </ul> FE port: <ul style="list-style-type: none"> <li>• In differential mode (8/20 <math>\mu</math>s): 1 kA</li> <li>• In common mode (8/20 <math>\mu</math>s): 2 kA</li> </ul>

### 2.3.4 Environmental Requirements of the APM30H, IBBS200T, IBBS200D, and TMC11H

The environmental requirements involve the operating temperature, relative humidity, altitude, and storage temperature.

#### Environmental Requirements of the APM30H

The APM30H can be used outdoors. [Table 2-13](#) describes the environmental requirements of the APM30H.

**Table 2-13** Environmental requirements of the APM30H

Item	Specification	Remarks
Operating temperature	-40°C to +50°C (with solar radiation of $1,120 \pm 10\%$ W/m <sup>2</sup> )	When the APM30H works under -20°C, a heater needs to be configured. <b>NOTE</b> The operating temperature for configuring a heater refers to the average of the local lowest temperatures for a month in a year.
Relative humidity	5% RH to 100% RH	-
Altitude	-60 m to +4,000 m	Above the altitude of 3,000 m, the maximum operating temperature decreases by 1°C each time the altitude increases by 100 m.
Wind speed	$\leq 67$ m/s	-
Storage temperature	-40°C to +70°C	-



Item	Specification	Remarks
Dustproof and waterproof specification	IP55	-
Noise	-	Complying with the ETS 300 753 4.1E standard (in a rural scenario)

## Environmental Requirements of the IBBS200T

The IBBS200T can be used outdoors. [Table 2-14](#) describes the environmental requirements of the IBBS200T.

**Table 2-14** Environmental requirements of the IBBS200T

Item	Specification	Remarks
Operating temperature	-20°C to +50°C (with solar radiation of not more than $1,120 \pm 10\%$ W/m <sup>2</sup> )	-
Relative humidity	5% RH to 100% RH	-
Altitude	-60 m to +4,000 m	Above the altitude of 3,000 m, the maximum operating temperature decreases by 1°C each time the altitude increases by 100 m.
Wind speed	$\leq 67$ m/s	-
Storage temperature	-40°C to +70°C	-
Dustproof and waterproof specification	IP55	-
Noise	-	Complying with the ETS 300 753 4.1E standard (in an urban scenario)

## Environmental Requirements of the IBBS200D

The IBBS200D can be used outdoors. [Table 2-15](#) describes the environmental requirements of the IBBS200D.

**Table 2-15** Environmental requirements of the IBBS200D

Item	Specification	Remarks
Operating temperature	-40°C to +45°C (with solar radiation of not more than $1,120 \pm 10\%$ W/m <sup>2</sup> )	When the IBBS200D works under -20°C, a heater film needs to be configured. <b>NOTE</b> The operating temperature for configuring a heating film refers to the average of the local lowest temperatures recorded for a month in a year.
Relative humidity	5% RH to 100% RH	-
Altitude	-60 m to +4,000 m	Above the altitude of 3,000 m, the maximum operating temperature decreases by 1°C each time the altitude increases by 100 m.
Wind speed	$\leq 67$ m/s	-
Storage temperature	-40°C to +70°C	-
Dustproof and waterproof specification	IP35	-
Noise	-	Complying with the ETS 300 753 4.1E standard (in a rural scenario)

## Environmental Requirements of the TMC11H

The TMC11H can be used outdoors. The environmental requirements of the TMC11H are the same as those of the APM30H. For details, see [Table 2-13](#).